

# Notice of Allowability

Application No.

09/746,014

Examiner

Fred Ferris

Applicant(s)

GOLDMAN ET AL.

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 27 March 2006.
2. ☒ The allowed claim(s) is/are 1-10, 13-24 and 27-33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
PRIMARY EXAMINER  
FRED FERRIS

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 25 January 2006 has been entered. Claims 1-10, 13-24, and 27-33 are currently pending in this applications and have been presented for examination based on applicant's amendments and supporting arguments filed on 25 January 2006 and 27 March 2006. Claims 1-10, 13-24, and 27-33 have now been allowed over the prior art of record.

### EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

*The application has been amended as follows:*

*In line 1 of claim 24 **delete** the word "online" and **insert** the word in-process before the word "optimization" and insert a colon after the phrase "steps of" in line 3..*

*Lines 1-3 of claim 24 should now read as follows:*

*"24. A method of automatic in-process optimization of a process, using an empirical model, said empirical process model connecting process inputs with predicted process outputs, the method comprising the steps of:  
generating data from....."*

*Examiners note: The term "in-process" appears to have been inadvertently omitted from applicant's amendment of 27 March 2006 and is needed to provide antecedent support for the limitation "carrying out in-process optimization" as now recited in the amended claim. The term "in-process" is added to claim 24 to mirror the amendments to independent claims 1 and 15 and correct the ambiguity noted above. The examiner telephoned applicant's representative Mr. Moynihan and advised applicant of the examiners amendment.*

### **Response to Arguments**

*3. Applicant's arguments filed 27 March 2006 have been fully considered and found to be persuasive.*

*Regarding applicant's response to 35 USC 112(1) rejections: The examiner withdraws the 112(1) rejection in view of applicant's amendment to independent claims 1, 15, and 24 now reciting an "in-process" optimization and the removal of the term model based controller from claim 15. Here, the term "in-process" is understood to mean the physical process of performing operations on a data optimization process. (Webster's II, (5))*

Regarding applicant's response to 35 USC 103(a) rejections: The examiner withdraws the 103(a) rejection in view of applicants' amendment to the claims and supporting arguments filed on 25 January 2006 and 27 March 2006.

**Allowable Subject Matter**

4. Claims 1-10, 13-24, and 27-33 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

Applicants are disclosing a method and system for automatic process control using design of experiments (DOE) techniques by analyzing input space comprising boundaries (empirical data) to a process model during simulation. This has been disclosed in the prior art of record.

While these elements are individually disclosed in the prior art, the prior art of record does not meet the conditions as suggested in MPEP section 2132, namely:

"The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

In this case the prior art of record does not disclose the specific combination of system elements or sequence of method steps as now recited in independent claim 1, 15, and 24. In particular, the examiner notes that while features such as process control of input space with boundaries, measurements at selected input space points, empirical

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mapping function for the operating points, and obtaining predictive input space process model from measurements are known and operationally part of commercially available DOE software packages such as STATISTICA, Design-Expert, and SimProcess, these features are not explicitly disclosed or rendered obvious as being in combination with the operating points being orthogonally spaced in the input space within which the process is considered operable as now recited in independent claims 1, 15, and 24.

U.S. Patent 5,781,430 issued to Tsai: discloses automatic process control of input space with boundaries, selecting (selector) input space points to maximize information based on number of (predetermined/selected) points, processes executed by a DOE module, empirical mapping function for the operating points (input/output) of the process, and running an experimental operation of a process. However, Tsai does not explicitly disclose these elements as being in combination with the operating points being orthogonally spaced in the input space within which the process is considered operable as now recited in independent claims 1, 15, and 24.

U.S. Patent 5,781,430 issued to Tsai: discloses automatic process control of input space with boundaries, selecting (selector) input space points to maximize information based on number of (predetermined/selected) points, processes executed by a DOE module, empirical mapping function for the operating points (input/output) of the process, and running an experimental operation of a process. However, Tsai does not explicitly disclose these elements as being in combination with the operating points being orthogonally spaced in the input space within which the process is considered operable as now recited in independent claims 1, 15, and 24.

U.S. Patent 6,373,033 issued to de Waard: teaches obtaining predictive input space process model from measurements, a predictive model of a process developed from process measurements, the use of auto-regression and a measurement controller in model development, and a control system for measured process inputs producing responsive outputs, but again does not explicitly disclose these elements as being in combination with the operating points being orthogonally spaced in the input space within which the process is considered operable as now recited in independent claims 1, 15, and 24.

The features noted above relating to the specific combination of elements and sequence of method steps renders the claimed invention non-obvious over the prior art of record. Dependent claims 2-10, 13, 14, 16-23 and 27-23 are deemed allowable as depending from independent claims 1, 15, and 24 respectively.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


### **Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the

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*group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached at 571-272-2279. The Official Fax Number is: (703) 872-9306*

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April 13, 2006

  
Fred Ferris  
Primary Examiner